

REMARKS/ARGUMENTS

Claims 1 and 3-21 are pending in this application. Claims 1 and 5 have been amended.

Rejections under 35 USC §102

Claims 1 and 3-21 are rejected under 35 USC 102(b) as being anticipated by Jung et al (GB 2 345 286 A). This rejection is respectfully traversed.

Jung et al is the Great Britain counterpart of the present application's parent application, Ser. No. 09/465,111 filed December 16, 1999 (both claim priority from Korean Application 98063793), and has a specification identical to the present application's parent application. For example, Examples 2 and 4 relied upon by the examiner to reject the claims are identical in the two applications. Applicants have perfected priority under 35 USC 120, for example, by filing an Application Data Sheet under 37 CFR 1.76 which contains specific reference to Ser. No. 09/465,111. Accordingly, the present application has an effective filing date of December 16, 1999 with respect to all subject matter disclosed in Jung et al, which date is prior to the publication of Jung et al on July 5, 2000. Since the effective filing date of the present application predates everything disclosed in Jung et al, the rejection under 35 USC 102(b) over Jung et al is overcome.

The claims of the present continuation-in-part application are directed to subject matter determined by the examiner to raise issues of new matter in the parent application. See, Advisory Action dated January 16, 2002 (paper # 9 in parent application Ser. No. 09/465,111). All of R₁, R₂, R₃, and R₄ in Chemical Formula 4 do not represent hydrogen at the same time, and at least one of R₁, R₂, R₃, and R₄ represent straight or branched C₁₋₁₀ ester including at least one hydroxyl group, straight or branched C₁₋₁₀ ketone including at least one hydroxyl group, straight or branched C₁₋₁₀ carboxylic group including at least one hydroxyl group, or straight or branched C₁₋₁₀ acetal including at least one hydroxyl group. Jung et al does not teach this limitation and therefore the claims of the present invention avoid the rejection under 35 USC 102(b).

Claims 1, 3 and 11-19 are again rejected under 35 USC 102(e) as being anticipated by Lee et al (US 6,403,281 B1). The claimed polymer is derived from a mixture of monomers consisting essentially of (a) two or more alicyclic olefin derivative monomers of the formula in which R_1 - R_4 do not represent H at the same time, (b) a cross-linking monomer, and (c) a maleic anhydride monomer. The language of independent claim 1 excludes the use of any other monomers to derive the polymer. The polymer disclosed by Lee et al is derived from monomers comprising (i) a cross-linker molecule, (ii) a norbornene or tetracyclododecene monomer, and (iii) at least one other suitable photoresist monomer. Monomer (ii) is an essential element in the derivation of the polymer of Lee et al. Monomer (ii) is expressly excluded from the monomers used to derive the claimed polymer. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. Since the exclusive use of an alicyclic olefin derivative monomer of the formula in which R_1 - R_4 do not represent H at the same time in the derivation of the polymer is not disclosed by Lee et al, claim 1 is not anticipated by Lee et al.

The examiner points out in the "Response to Arguments" (paragraph 12 of the last office action) that present claim 1 only says that each of the alicyclic monomer units (a) has the formula in which R_1 - R_4 do not represent H at the same time, not that each of the alicyclic monomers that are present in the polymer have that formula. However, since the polymer of present claim 1 is derived from the alicyclic monomers (a) and those monomers are the only alicyclic monomers used to form the polymer, it follows that each of the alicyclic monomers that are present in polymer have that formula. Furthermore, the formula in claim 3 does expressly require that the alicyclic monomers present in the polymer have the formula in which R_1 - R_4 do not represent H at the same time.

The examiner has taken the position that the presence of a monomer unit of norbornene or tetracyclododecene would not materially affect the basic and novel characteristics of the claimed invention as those monomer units were originally encompassed in the parent application. Applicants respectfully submit that the examiner has no support for this position and cannot rely on applicants' own parent application to reject the claims.

First of all, the examiner's statement is in direct contradiction with the teachings of Lee et al that the presence of the monomer units of norbornene or tetracyclododecene have a profound effect on the characteristics of the resultant polymer. As applicants have previously pointed out (page 10 of the amendment dated July 12, 2004), Lee et al states at col. 8, line 64 to col. 9, line 5:

"As shown in formulas 10 and 11, polymers of the present invention can comprise a polymeric unit derived from a monomer comprising a sterically bulky group. Accordingly, a predetermined amount of norbornylene and tetracyclododecene having a relatively small steric hindrance is added to make it possible to properly control the molecular weight of the polymer to about 5000 to about 8000, to increase the polymerization yield to about 40% or more and to improve the thermal stability of the polymer."

It follows that the claimed polymer, which does not have the norbornylene and tetracyclododecene monomer units, would have materially different characteristics than the polymer disclosed by Lee et al.

Secondly, the support cited by the examiner for his position is that this application's parent application, now abandoned, does not exclude polymers with norbornene or tetracyclododecene monomer units. It is well established that the Lee et al reference must itself contain the subject matter relied on in the 102(e) rejection, and as explained above, that reference expressly contradicts the examiner's position. See, e.g. MPEP 2136.02. In addition, the examiner can only rely on the disclosures in patents and published applications by another as prior art to support a 102(e) rejection. The disclosure in the present application's parent application is clearly not in a patent or in a published application and is clearly not by another. Accordingly, the disclosure in the parent application cannot be used to support the examiner's position.

Claims 3 and 11-19 are ultimately dependent on claim 1 and are distinguishable over Lee et al for the same reasons. For the reasons stated above, withdrawal of the rejection is respectfully requested.

Rejections under 35 USC §103

Claims 20 and 21 are again rejected as obvious over Lee et al. Lee et al was granted on June 11, 2002, which is after the present application's filing date of February 22, 2002, on an application with an earlier effective filing date (August 22, 2000). Therefore, Lee et al is only available as prior art under 35 USC 102(e). In accordance with 35 USC 103(c), Lee et al is disqualified as prior art under 35 USC 103(a) against claims 20 and 21 since the subject matter of Lee et al and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. The Statement of Common Ownership set forth below is sufficient to establish such common ownership. Therefore the rejection is overcome and withdrawal of the rejection is respectfully requested.

Claims 1, 3 and 5-19 are rejected as obvious over Kajita et al (US 6,180,316). Kajita et al teaches a radiation-sensitive composition which comprises: (A) a polymer containing (a) a recurring unit (I) of formula (1), with or without a recurring unit (II) of maleic anhydride, and (b) a recurring unit (III) having at least two polymerizable carbon-carbon double bonds and at least one acid-decomposable divalent group of formula (3) or (4); and (B) a photoacid generator. The examiner points out that in Synthesis Example 14 of Kajita et al, monomer unit 27-2 may be replaced by the compound 5-(2-hydroxyethyl)oxycarbonylbicyclo [2.2.1]hept-2-ene, which is listed at col. 12, line 67 as being a suitable norbornene derivative monomer unit of polymer (A). This modification of Kajita et al would provide a polymer (A) having two alicyclic monomer units meeting the requirements of Chemical Formula 4 of the present claims; i.e. monomer (27-1) and 5-(2-hydroxyethyl)oxycarbonylbicyclo [2.2.1]hept-2-ene, a maleic anhydride monomer unit (27-3), and divalent monomer (27-4). Monomer (27-4) is typical of the recurring unit (III) disclosed by Kajita et al, which has the specific acid-decomposable ester or carbonate group set forth in formula (3) and (4). These groups all have a branched alkyl linkage including a tertiary carbon, which facilitates the acid decomposition, i.e. R1 and R2 in formula (3) and R3 and R4 in formula (4) are all alkyl groups.

Preferred polymers of the present invention comprise a cross-linking monomer (b) having a straight alkyl linkage R, and independent claims 1 and 5 have been amended to limit the claimed polymers to those polymers. The polymers of the amended claims are thereby clearly

distinguished over the polymers taught by Kajita et al. There is no teaching or suggestion in Kajita et al that the groups of formula (3) and (4) could include a straight alkyl linkage, and in fact Kajita et al teaches away from this feature by requiring a branched alkyl linkage. The recurring monomer unit (III) taught by Kajita et al decomposes in the presence of acid causing the branched structure of the polymer to destroy, thereby decreasing the molecular weight of the polymer. (see col. 9, lines 38-43). The cross-linking monomer (b) of the present claims improves the polymerization yield by making the polymers cross-link to one another and need not be acid-decomposable.

For the reasons stated above, applicants respectfully submit that amended claim 1, as well as claims 2-4 and 11-19 dependent thereon, and amended claim 5, as well as claims 6-10 dependent thereon, avoid the rejection and are in condition for allowance.

Statement of Common Ownership

The present application U.S. Ser. No. 10/080,507 and Lee et al U.S. Pat. No. 6,403,281 were, at the time the invention of the present application was made, both owned by Hyundai Electronics Industries Co., Ltd.

Double Patenting

Claims 1, 3, 11-17 and 19-21 are rejected for double patenting over claims 1, 4-8, 10, 12, 16-19 and 21 of Lee et al. Applicants respectfully submit that the amended claims are patentably distinct from the claims of Lee et al because the amended claims are neither anticipated nor obvious over claims of Lee et al for the reasons discussed in detail above.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Appl. No. 10/080,507
Amdt. dated June 2, 2005
Reply to Office Action of March 7, 2005

PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,



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